IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:	Henri Jacques Suermondt et al.	§	Art Unit:	3623
Serial No.:	09/945,193	§		
		§	Examiner:	Scott L. Jarrett
Filed:	August 31, 2001	§		
For:	Predicting Parts for Onsite Repair	§	Atty. Dkt. No.:	10007972-1 (HPC.0415US)

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Commissioner for Patents
P.O. Box 1450
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APPEAL BRIEF PURSUANT TO 37 C.F.R § 41.37

Sir:

The final rejection of claims 29, 30, 32-34, 36-42, 44-46, and 48-60 is hereby appealed.

I. REAL PARTY IN INTEREST

The real party in interest is Hewlett-Packard Development Company, L.P.

II. RELATED APPEALS AND INTERFERENCES

None.

III. STATUS OF THE CLAIMS

Claims 29, 30, 32-34, 36-42, 44-46, and 48-60 have been finally rejected and are the subject of this appeal. Claims 1-28, 31, 35, 43, 47, and 61 have been cancelled.

Date of Deposit: May 19, 2008

I hereby certify that this correspondence is being electronically transmitted to the U.S. Patent Office on the date indicated above.

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IV. STATUS OF AMENDMENTS

No amendment after final rejection has been submitted.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

The following provides a concise explanation of the subject matter defined in each of the independent claims involved in the appeal, referring to the specification by page and line number and to the drawings by reference characters, as required by 37 C.F.R. § 41.37(c)(1)(v). Each element of the claims is identified by a corresponding reference to the specification and drawings where applicable. Note that the citation to passages in the specification and drawings for each claim element does not imply that the limitations from the specification and drawings should be read into the corresponding claim element.

Independent claim 32 recites a method executed by a computer, comprising:

> determining (Fig. 1:102) costs of mis-predicting parts that may be replaced during an onsite repair of a product in response to a repair history (Spec., p. 5, lines 2-11);
>
> selecting (Fig. 1:104) a subset of the parts to be sent to the onsite repair in response to the costs (Spec., p. 5, lines 13-14); and
>
> identifying a set of symptoms associated with the product (Spec., p. 10, lines 13-22),
>
> wherein determining the costs comprises determining a cost of mis-predicting a subgroup of the parts according to parameters indicating at least:
>
> (1) a number of trips that the set of symptoms were reported, the subgroup of parts were sent, and at least one part not in the subgroup of parts was needed to complete the onsite repair (Spec., p. 10, line 31-p. 11, line 2); and
>
> (2) a number of trips that the set of symptoms were reported, the subgroup of parts were sent, and the subgroup of parts included at least one part that was unnecessary in the onsite repair (Spec., p. 10, line 31-p. 11, line 4).

Independent claim 38 recites a method executed by a computer, comprising:

determining (Fig. 1:102) costs of mis-predicting parts that may be replaced during an onsite repair of a product in response to a repair history, wherein the costs are computed based on probabilities of over-predicting and under-predicting the parts (Spec., p. 5, lines 2-11);

selecting (Fig. 1:104) a subset of the parts to be sent to the onsite repair in response to the costs (Spec., p. 11, lines 13-14); and

selecting another subset of the parts for training of call qualifiers in response to the costs (Spec., p. 11, lines 8-11).

Independent claim 42 recites a method executed by a computer, comprising:

determining (Fig. 1:102) costs of mis-predicting parts that may be replaced during an onsite repair of a product in response to a repair history, wherein the costs are computed based on probabilities of over-predicting and under-predicting the parts (Spec., p. 5, lines 2-11);

selecting (Fig. 1:104) a subset of the parts to be sent to the onsite repair in response to the costs (Spec., p. 5, lines 13-14); and

determining which personnel to target for additional training in response to the costs (Spec., p. 11, lines 25-27).

Independent claim 44 recites an apparatus having a computing device that determines costs of mis-predicting parts that may be replaced during an onsite repair of a product in response to a repair history and that selects a subset of the parts to be sent to the onsite repair in response to the costs (Spec., p. 5, lines 2-14),

wherein the costs are computed based on probabilities of over-predicting and under-predicting the parts (Spec., p. 6, lines 20-21),

wherein the computing device computes the costs based on the probabilities by determining numbers of times that the corresponding parts were under-predicted and numbers of times that the parts were over-predicted and numbers of times that the corresponding parts were correctly predicted, the repair history containing the numbers of times that the corresponding parts were under-predicted, the numbers of times that the parts were over-predicted, and the numbers of times that the corresponding parts were correctly predicted (Spec., p. 6, lines 10-18; p. 7, lines 21-30).

Independent claim 45 recites an apparatus having a computing device that determines costs of mis-predicting parts that may be replaced during an onsite repair of a product in response to a repair history and that selects a subset of the parts to be sent to the onsite repair in response to the costs (Spec., p. 5, lines 2-14),

wherein the costs comprise a cost of mis-predicting a subgroup of the parts according to parameters indicating at least:

(1) a number of trips that a set of symptoms were reported, the subgroup of parts were sent, and at least one part not in the subgroup of parts was needed to complete the onsite repair (Spec., p. 10, line 31-p. 11, line 2); and

(2) a number of trips that the set of symptoms were reported, the subgroup of parts were sent, and the subgroup of parts included at least one part that was unnecessary in the onsite repair (Spec., p. 10, line 31-p. 11, line 4).

Independent claim 58 recites a method executed by a computer, comprising:

determining (Fig. 1:102) costs of mis-predicting parts that may be replaced during an onsite repair of a product in response to a repair history, wherein the costs are computed based on probabilities of over-predicting and under-predicting the parts (Spec., p. 5, lines 2-14); and

selecting (Fig. 1:104) a subset of the parts to be sent to the onsite repair in response to the costs (Spec., p. 5, lines 13-14),

wherein determining the costs of mis-predicting comprises determining expected wastes for the corresponding parts, wherein each expected waste is computed based on a number of times the corresponding part was under-predicted, a number of times the corresponding part was over-predicted, a number of times the corresponding part was correctly predicted, a cost of over-predicting the corresponding part, and a cost of under-predicting the corresponding part, wherein the repair history contains the number of times the corresponding part was under-predicted, the number of times the corresponding part was over-predicted, and the number of times the corresponding part was correctly predicted (Spec., p. 6, lines 10-18; p. 7, lines 21-30).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. Claims 32 and 45 Rejected Under 35 U.S.C. § 103(a) as Unpatentable over Patton & Feldman, "Service Parts Handbook" (P&F) in view of Patton et al., "Service Management Principles and Practice" (Patton et al.).[1]

B. Claims 29, 30, 33, 34, 36-40, 42, 44, 46, 48-52, and 54-60 Rejected Under 35 U.S.C. § 102(b) as Anticipated by P&F.[2]

C. Claims 41 and 53 Rejected Under 35 U.S.C. § 103(a) as Unpatentable over P&F in View of U.S. Patent No. 5,682,421 (Glovitz).

VII. ARGUMENT

The claims do not stand or fall together. Instead, Appellant presents separate arguments for various independent and dependent claims. Each of these arguments is separately argued below and presented with separate headings and sub-headings as required by 37 C.F.R. § 41.37(c)(1)(vii).

A. Claims 32 and 45 Rejected Under 35 U.S.C. § 103(a) as Unpatentable over Patton & Feldman, "Service Parts Handbook" (P&F) in view of Patton et al., "Service Management Principles and Practice" (Patton et al.).

1. Claims 32, 45.

Independent claim 32 was erroneously rejected as being obvious over P&F in view of Patton. To make a determination under 35 U.S.C. § 103, several basic factual inquiries must be performed. *See Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 U.S.P.Q. 459 (1965). Two of these basic factual inquiries include: (1) determining the scope and content of the prior art; and (2) ascertaining the differences between the prior art and the claims at issue. *Id.*

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[1] Claim 44 was incorrectly included in introductory paragraph 7 on page 29 of the 12/17/2007 Office Action – it is noted that claim 44 was actually rejected under 35 U.S.C. § 102 over P&F (*see* 12/17/2007 Office Action at 17).

[2] The introductory paragraph 5 on page 6 of the 12/17/2007 Office Action failed to list claims 33, 34, 42, 44, and 46 – these claims were rejected under 35 U.S.C. § 102 over P&F on pages 17-19, 21, and 23 of the 12/17/2007 Office Action.

Here, a comparison of the claimed subject matter and the teachings of P&F and Patton will reveal that there are significant differences between the claimed subject matter and the reference teachings.

Claim 32 recites, inter alia, the following:

> wherein determining the costs comprises determining a cost of mis-predicting a subgroup of the parts according to parameters indicating at least:
> (1) a number of trips that the set of symptoms were reported, the subgroup of parts were sent, and at least one part not in the subgroup of parts was needed to complete the onsite repair; and
> (2) a number of trips that the set of symptoms were reported, the subgroup of parts were sent, and the subgroup of parts included at least one part that was unnecessary in the onsite repair.

It is respectfully submitted that the hypothetical combination of P&F and Patton does not disclose or hint at either of sub-elements (1) and (2) above. The Examiner conceded that P&F fails to disclose "a number of **trips**" as recited in claim 32, but stated that Patton remedies this shortcoming of P&F. 12/17/2007 Office Action at 31.

Specifically, the Examiner cited to various parameters in P&F: First Pass Fill Rate (FPFR), First Call Fix Rate (FCFR), and Demand Accommodation/Satisfaction. The Examiner cited pages 58, 90, 252 of P&F as disclosing FCFR, pages 10, 367, 399, and 466 as disclosing FPFR, and pages 59 and 405 as disclosing Demand Accommodation/Satisfaction.

FCFR is equal to quantity satisfied at first attempt divided by total requests. P&F, p. 58. It is a measure of total system performance. FPFR is a measure of stocking location performance, and is the percentage of time that the part needed is available for issue in the stocking location that is planned to provide first level support for that part. P&F, pp. 367, 399. Demand Accommodation/Satisfaction is measured by the number of requested parts that are on the authorized stock list. P&F, p. 59. None of these parameters bear any resemblance to a

"number of trips that the set of symptoms were reported, the subgroup of parts were sent, and at least one part not in the subgroup of parts was needed to complete the onsite repair," as recited in claim 32. Similarly, none of these parameters provide any hint of a "a number of trips that the set of symptoms were reported, the subgroup of parts were sent, and the subgroup of parts included at least one part that was unnecessary in the onsite repair," as recited in claim 32.

Patton also fails to disclose or hint at the claimed subject matter missing from claim 32.

The Examiner pointed to various parameters in Patton, including Callback Rate, First Call Fix Rate, Attempts per Incident. 12/17/2007 Office Action at 31. The Callback Rate is the number of repeat attempts divided by the total attempts. Patton, p. 48. The First Call Fix Rate is discussed above in connection with P&F. The Attempts per Incident is the total attempts divided by the number of incidents. *Id.* These parameters do not provide any indication of the following claimed subject matter:

> (1) a number of trips that the set of symptoms were reported, the subgroup of parts were sent, and at least one part not in the subgroup of parts was needed to complete the onsite repair; and
> (2) a number of trips that the set of symptoms were reported, the subgroup of parts were sent, and the subgroup of parts included at least one part that was unnecessary in the onsite repair.

The Examiner also cited to page 46 of Patton, which refers to the following parameter: Parts per Unit Repair, which is the sum of all costs of parts used divided by the number of repairs. This parameter also has nothing to do with the number of trips parameters of claim 32.

The Examiner further cited page 50 of Patton, which refers to call backs. 12/17/2007 Office Action at 33. According to this passage of Patton, the measurement of the number of call backs provides an evaluation of the technical capability of the service personnel. This passage further states that a call back represents a service call caused by the inadequacy of an original service visit. Moreover, this passage states that the call back measure evaluates the

problem-solving efficiency of the service organization. However, this call back measurement constitutes neither of the parameters in sub-elements (1) and (2) of claim 32 noted above.

The Examiner appeared to have just cited a number of parameters from the prior art references and then asserted that somehow such parameters represent the two claimed parameters above. That is clearly not the case. Note that the "number of trips" as claimed is dependent on combinations of several other criteria, as claimed, which combinations are clearly not taught or hinted at by Patton.

In the Response to Arguments section of the final Office Action, the Examiner argued that the "number of trips" is equivalent [sic] the number of trips/service calls a technician returns/is called back to repair a product which is captured in at least the following metrics used to monitor/analyze the performance of technicians [sic] number of service calls, the first call fix rate, first pass fail rate ...." 12/17/2007 Office Action at 4. As explained above, the first pass fail rate and first call fix rate parameters have nothing to do with the number of trips parameters specifically recited in claim 32.

The Response to Arguments section of the final Office Action also merely repeated the citations of Patton made in the previous rejection.

In view of the foregoing, it is clear that even if P&F and Patton could be hypothetically combined, the hypothetical combination of the references would not have led to the claimed invention. Therefore, the obviousness rejection of claim 32 is clearly defective.

Independent claim 45 is allowable over P&F and Patton for similar reasons as claim 32.

Reversal of the final rejection of the above claims is respectfully requested.

B. Claims 29, 30, 33, 34, 36-40, 42, 44, 46, 48-52, and 54-60 Rejected Under 35 U.S.C. § 102(b) as Anticipated by P&F.

1. Claim 38.

Independent claim 38 was erroneously rejected as anticipated by P&F.

Claim 38 recites the following element that is clearly not disclosed by P&F: "selecting another subset of the parts for training of call qualifiers in response to the costs." With respect to this element of claim 38, the Office Action cited the following passages of P&F: pages 53-54, 254, 387, 241, 184, 395, 248, Figures 16-1, 16-2, 25-2.

P&F discusses call management and help desk and generic training (pp. 53-54), a customer calling a call management center (Figure 16-2 & p. 254), help desk diagnostics (p. 241), logistics functional organizations (p. 387), training cost per unit under contract and training costs sustained only to support an EOL product (p. 184), formal training with on-the-job followup (p. 395 & Figure 25-2), and remedial training of technicians in diagnostics and repair based on comparing parts usage across technicians (p. 248). However, nowhere in P&F is there any teaching of selecting a subset of parts for *training call qualifiers* ***in response to the costs*** computed based on probabilities of over-predicting and under-predicting the parts.

Therefore, claim 38 is not anticipated by P&F.

Reversal of the final rejection of the above claim is respectfully requested.

2. Claims 29, 30, 33, 34, 36, 37, 39, 40, 55-57, 59, 60.

Independent claim 42 was also incorrectly rejected as being anticipated by P&F.

Claim 42 recites "determining which personnel to target for additional training *in response to the costs*," which are costs computed based on probabilities of over-predicting and under-predicting the parts. Although P&F refers to training, there is absolutely no teaching in

P&F of determining which personnel to target for additional training in response to the costs computed based on probabilities of over-predicting and under-predicting the parts.

The Examiner cited the following passages of P&F as disclosing the "determining" clause of claim 42: ¶ 4, p. 184; p. 395; Figs. 25-2; p. 248. Page 184 refers to the question of the personnel training costs per unit under contract, and the trend of such personnel training costs. Also, page 184 of P&F refers to a question regarding training costs being sustained only to support the EOL (end-of-life) product. Page 395 of P&F refers to formal training with on-the-job follow-up being vital for qualified parts personnel. As described in this passage of P&F, when a person is assigned to a service parts function, an initial orientation walk through the warehouse, call management center, technical assistance center, and parts planning should be provided by a supervisor. The training section of P&F also refers to a classroom session being conducted to outline all the activities that go on and how the procedures meet those demands. Nowhere in this passage is there any reference of "determining which personnel to target for additional training **in response to the costs**."

Fig. 25-2 of P&F depicts two curves, one representing equipment and application complexity, and another representing customer and technician skill and motivation. Fig. 25-2 also indicates that a gap between these two curves is to be filled by training and technical assistance. However, there is no indication that this training involves determining which personnel to target for additional training in response to the costs computed based on probabilities of over-predicting and under-predicting the parts.

Page 248 of P&F refers to technicians needing remedial training in diagnostics and repair high use rates of parts is detected. This has nothing to do with the "determining" performed in claim 42.

In view of the foregoing, it is clear that claim 42 and its dependent claims are not anticipated by P&F.

Reversal of the final rejection of the above claims is respectfully requested.

3. Claims 44, 46, 48-52, 58.

Independent claim 58 was also incorrectly rejected as being anticipated by P&F.

Claim 58 recites "wherein determining the costs of mis-predicting comprises determining expected wastes for the corresponding parts, wherein each expected waste is computed based on a number of times the corresponding part was under-predicted, a number of times the corresponding part was over-predicted, a number of times the corresponding part was correctly predicted, a cost of over-predicting the corresponding part, and a cost of under-predicting the corresponding part, wherein the repair history contains the number of times the corresponding part was under-predicted, the number of times the corresponding part was over-predicted, and the number of times the corresponding part was correctly predicted."

The Examiner cited the following parameters of P&F as disclosing the above feature: First Pass Fill Rate, Demand Accommodation, Demand Satisfaction, Fix Call Rate. 12/17/2007 Office Acton at 28. These parameters to do not constitute the number of times the corresponding part was under-predicted, the number of times the corresponding part was over-predicted, and the number of times the corresponding part was correctly predicted, which are all part of the repair history.

Therefore, claim 58 is not anticipated by P&F.

Claim 44 and its dependent claims are allowable for similar reasons as claim 58.

Reversal of the final rejection of the above claims is respectfully requested.

4. Claim 54.

Claim 54 depends from claim 44, and is therefore allowable for at least the same reasons as claim 44. Moreover, claim 54 recites that the computing device determines which personnel to target for additional training in response to the costs. For reasons stated above with respect to claim 42, claim 54 is further allowable over P&F. Therefore, reversal of the final rejection of the above claim is respectfully requested.

C. Claims 41 and 53 Rejected Under 35 U.S.C. § 103(a) as Unpatentable over P&F in View of U.S. Patent No. 5,682,421 (Glovitz).

1. Claims 41, 53.

In view of the allowability of base claims 42 and 44 over P&F, it is respectfully submitted that the obviousness rejection of claims 41 and 53 over P&F and Glovitz has also been overcome.

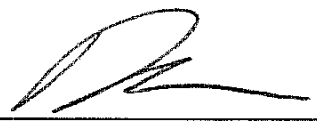
Reversal of the final rejection of the above claims is respectfully requested.

CONCLUSION

In view of the foregoing, reversal of all final rejections and allowance of all pending claims is respectfully requested.

Respectfully submitted,

Date: May 19, 2008



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VIII. APPENDIX OF APPEALED CLAIMS

The claims on appeal are:

29. The method of claim 42, wherein computing the costs based on the probabilities of over-predicting the parts comprises computing the costs associated with unnecessarily sending the corresponding parts to the onsite repair.

30. The method of claim 42, wherein computing the costs based on the probabilities of under-predicting the parts comprises computing the costs associated with not sending the corresponding parts when needed to the onsite repair.

32. A method executed by a computer, comprising:

determining costs of mis-predicting parts that may be replaced during an onsite repair of a product in response to a repair history;

selecting a subset of the parts to be sent to the onsite repair in response to the costs; and

identifying a set of symptoms associated with the product,

wherein determining the costs comprises determining a cost of mis-predicting a subgroup of the parts according to parameters indicating at least:

(1) a number of trips that the set of symptoms were reported, the subgroup of parts were sent, and at least one part not in the subgroup of parts was needed to complete the onsite repair; and

(2) a number of trips that the set of symptoms were reported, the subgroup of parts were sent, and the subgroup of parts included at least one part that was unnecessary in the onsite repair.

33. The method of claim 42, wherein computing the costs based on the probabilities of over-predicting and under-predicting is according to:

numbers of times that the corresponding parts were under-predicted;

numbers of times that the corresponding parts were over-predicted;

numbers of times that the corresponding parts were correctly predicted.

34. The method of claim 33, further comprising:

computing the probabilities of under-predicting the parts using the numbers of times that the parts were under-predicted; and

computing the probabilities of over-predicting the parts using the numbers of times the parts were over-predicted.

36. The method of claim 42, wherein determining the costs includes determining an average of the costs associated with under-predicting and over-predicting the parts.

37. The method of claim 42, wherein selecting the subset of the parts includes selecting the subset of the parts for transport to the onsite repair.

38. A method executed by a computer, comprising:

determining costs of mis-predicting parts that may be replaced during an onsite repair of a product in response to a repair history, wherein the costs are computed based on probabilities of over-predicting and under-predicting the parts;

selecting a subset of the parts to be sent to the onsite repair in response to the costs; and

selecting another subset of the parts for training of call qualifiers in response to the costs.

39. The method of claim 42, wherein selecting the subset of the parts includes selecting the subset of the parts for flagging to call qualifiers.

40. The method of claim 42, wherein selecting the subset of the parts includes selecting the subset of the parts for stocking a repair vehicle.

41. The method of claim 42, further comprising determining which products are least desirable to support in response to the costs.

42. A method executed by a computer, comprising:

determining costs of mis-predicting parts that may be replaced during an onsite repair of a product in response to a repair history, wherein the costs are computed based on probabilities of over-predicting and under-predicting the parts;

selecting a subset of the parts to be sent to the onsite repair in response to the costs; and

determining which personnel to target for additional training in response to the costs.

44. An apparatus having a computing device that determines costs of mis-predicting parts that may be replaced during an onsite repair of a product in response to a repair history and that selects a subset of the parts to be sent to the onsite repair in response to the costs,

wherein the costs are computed based on probabilities of over-predicting and under-predicting the parts,

wherein the computing device computes the costs based on the probabilities by determining numbers of times that the corresponding parts were under-predicted and numbers of times that the parts were over-predicted and numbers of times that the corresponding parts were correctly predicted, the repair history containing the numbers of times that the corresponding parts were under-predicted, the numbers of times that the parts were over-predicted, and the numbers of times that the corresponding parts were correctly predicted.

45. An apparatus having a computing device that determines costs of mis-predicting parts that may be replaced during an onsite repair of a product in response to a repair history and that selects a subset of the parts to be sent to the onsite repair in response to the costs,

wherein the costs comprise a cost of mis-predicting a subgroup of the parts according to parameters indicating at least:

(1) a number of trips that a set of symptoms were reported, the subgroup of parts were sent, and at least one part not in the subgroup of parts was needed to complete the onsite repair; and

(2) a number of trips that the set of symptoms were reported, the subgroup of parts were sent, and the subgroup of parts included at least one part that was unnecessary in the onsite repair.

46. The apparatus of claim 44, wherein the repair history includes an identification of a set of parts sent to a set of prior onsite repairs and a list of actual parts needed in the prior onsite repairs.

48. The apparatus of claim 44, wherein the costs determined by the computing device comprise waste metrics for a plurality of sets of parts and the subset of parts selected comprises less than all the sets of parts for the onsite repair in response to the waste metrics.

49. The apparatus of claim 44, wherein the parts are selected for transport to the onsite repair.

50. The apparatus of claim 44, wherein the parts are selected for training of call qualifiers.

51. The apparatus of claim 44, wherein the parts are selected for flagging to call qualifiers.

52. The apparatus of claim 44, wherein the parts are selected for stocking a repair vehicle.

53. The apparatus of claim 44, wherein the computing device determines which products are least desirable to support in response to the costs.

54. The apparatus of claim 44, wherein the computing device determines which personnel to target for additional training in response to the costs.

55. The method of claim 42, wherein determining the costs of mis-predicting the parts is for a particular onsite repair of a particular product, and wherein selecting the subset of the parts is for the particular onsite repair of the particular product.

56. The method of claim 42, wherein determining the costs of mis-predicting parts comprises determining the costs of mis-predicting corresponding sets of parts.

57. The method of claim 56, wherein selecting the subset of parts comprises selecting less than all of the sets of parts.

58. A method executed by a computer, comprising:

determining costs of mis-predicting parts that may be replaced during an onsite repair of a product in response to a repair history, wherein the costs are computed based on probabilities of over-predicting and under-predicting the parts; and

selecting a subset of the parts to be sent to the onsite repair in response to the costs,

wherein determining the costs of mis-predicting comprises determining expected wastes for the corresponding parts, wherein each expected waste is computed based on a number of times the corresponding part was under-predicted, a number of times the corresponding part was over-predicted, a number of times the corresponding part was correctly predicted, a cost of over-predicting the corresponding part, and a cost of under-predicting the corresponding part, wherein the repair history contains the number of times the corresponding part was under-predicted, the number of times the corresponding part was over-predicted, and the number of times the corresponding part was correctly predicted.

59. The method of claim 42, wherein computing the costs based on the probabilities of over-predicting and under-predicting takes into account a cost of an extra trip to a repair site and a cost of one of restocking and storing an unneeded part.

60. The method of claim 42, wherein selecting the subset of parts comprises selecting less than all the parts.

IX. EVIDENCE APPENDIX

None.

X. RELATED PROCEEDINGS APPENDIX

None.